

Mansoura University 	Faculty of Pharmacy Department of Microbiology and Immunology		Biomedical Engineering Program Medical & Pharmaceutical procedures (MPE492) Level 400 Final exam: 9th of January 2020 Time allowed: 2 hours	
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ANSWER THE FOLLOWING QUESTIONS:

❖ **Question I: (20 Marks)**

Mark: <hr style="border-top: 1px dashed black;"/>

You are a biomedical Engineer in the sales department of an international company for medical devices. Please answer the following questions that the consumers asked you regarding some devices of your company.

1- The precautions for using Hot air oven. (6 Marks)

2- The precautions for using for using a centrifuge. (4 Marks)

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3- The troubleshooting's for using autoclaves. (3 Marks)

4- The main parts of an autoclave. (7 Marks)

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Table for answers of Question II and III.

Answers of Question II					Mark of Question 2:		
Question	Answer	Question	Answer	Question	Answer	Question	Answer
1		6		11		16	
2		7		12		17	
3		8		13		18	
4		9		14		19	
5		10		15		20	

Answers of Question III		Mark of Question 3:
Question	Answer	

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

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❖ **Question II: (20 Marks)**

Choose the correct answer for the following statements and transfer its letter to the table in page number 3: (20 Marks/1 Mark each)

Mark: <hr style="border-top: 1px dashed black;"/>

ولن يلتفت الى اى اجابات خاصة بهذا السؤال الا فقط الموجودة في المكان المخصص لها بالجدول في صفحة رقم ٣ :

1- The following is one of the options of a centrifuge:			
a) Cooling			b) Heating
c) Shaking			d) All the above
2- The common speed for both centrifuges and shaking incubators is:			
a) rpm			b) xg
c) rcf			d) All the above
3- The message "Unbalanced error" might appear with one of the following devices:			
a) Incubators			b) Centrifuge
c) Cooling centrifuge			d) Both B and C.
4- The following is true regarding the centrifuge:			
a) The greater the xg the smaller the pellet			
b) The greater the rcf the more the sedimentation rate.			
c) The greater the rpm the lower the sedimentation rate.			
d) The greater the speed of centrifugation the smaller the pellet.			
5- The swing bucket rotor is often, and most commonly used for:			
a) RBCs.	b) Bacterial cells	c) Cell culture labs	d) All the above

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6- The following freezer is used for long term storage of cells:			
a) - 60 °C	b) - 70 °C		
c) - 80 °C	d) - 90 °C		
7- At - 180 °C, Nitrogen exists as:			
a) Solid	b) Liquid	c) Gas	d) No answer is correct
8- A transparent glass door is often present in the following device:			
a) Centrifuge		b) Hot air oven	
c) Incubator		d) Autoclave	
9- In CO₂ incubators, the level of CO₂ is usually between:			
a) 15-25 %		b) 5-10 %	
c) 85-95 %		d) 15-20 %	
10- CO₂ incubators are usually used for cultivation of:			
a) Cell (Tissue) culture		b) Cultivation of bacteria	
c) Cultivation of viruses		d) All the above	
11- Most of microorganisms grow at the following temperature:			
a) 30 °C	b) 37 °C	c) 40 °C	d) 25 °C
12- The following is true regarding chemical methods of microbial growth:			
a) Sugars are examples of salts that kill bacteria		b) Betadine is an example of salts	
c) Sugars kills bacteria by osmosis		d) Only a & c	
13- Plastic syringes are sterilized by:			
a) Ethylene oxide	b) Betadine	c) Autoclave	d) Salts
14- A chemical that is added to food or pharmaceutical preparation to prevent the growth of microorganisms:			
a) Antiseptic	b) Disinfectant	c) Preservative	d) Sterilizing agent

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15-Laminar flow is important:			
a) Incubation of bacteria		b) Provide sterile working area	
c) Centrifugation		d) For incineration	
16- Laminar flow contains the following:			
a) UV lamp		b) Bunsen Burner flame	
c) HEPA filter		d) All the above	
17-Ultrasound vibration is an example of.....sterilization:			
a) Mechanical	b) Physical	c) Chemical	d) Biological
18-Disinfectant is an agent which Kills microorganisms:			
a) On floor	b) On skin	c) In food	d) All the above
19-Antiseptic is an agent which Kills microorganisms:			
a) On floor	b) On skin	c) In food	d) All the above
20-Sanitizer is an agent which Kills microorganisms:			
a) On floor	b) On skin	c) On materials that comes in contact with food e.g. dishes.	d) All the above

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Question III: (10 Marks)

Being a biomedical Engineer, then you should be aware of the following figures (A-I) for devices, part of devices or consumables.

Please only answer the following questions in the table in Page 3.

ولن يلتفت الى اى اجابات خاصة بهذا السؤال الا فقط الموجودة فى المكان المخصص لها بالجدول فى صفحة رقم 3:

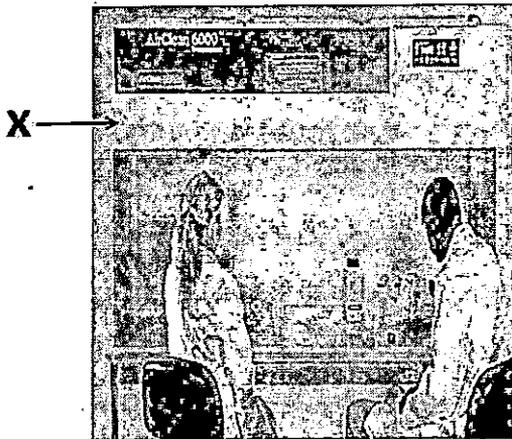
<p>Mark:</p> <p>.....</p>

- 1) What is the name of the device in figure A?
- 2) What is the name of part X of the device in figure A?
- 3) What is the name of the device in figure B?
- 4) What is the name the consumable in figure C?
- 5) What is the method of sterilization that the consumable in figure C depends on?
- 6) What is the name of consumable in figure D?
- 7) Which consumable (E or F) is used for cultivation of bacteria?
- 8) What is the name of the device in figure G?
- 9) What is the name of part of device in figure H?
- 10) What is the use of the device in figure I?

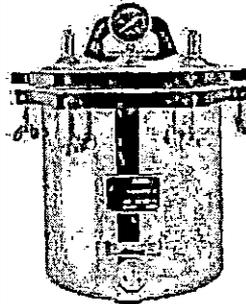


Devices, part of devices or consumables:

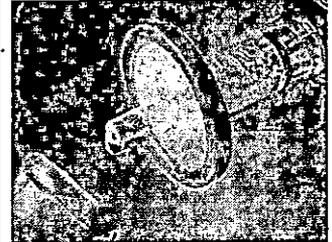
A)



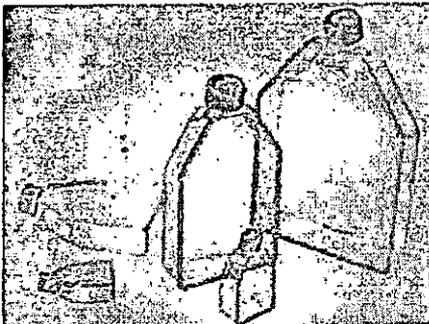
B)



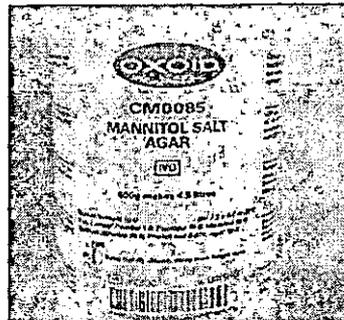
C)



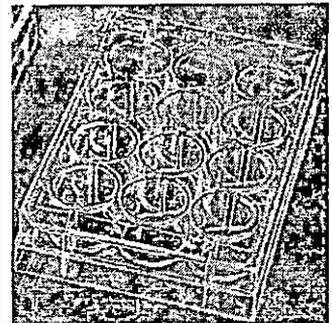
D)



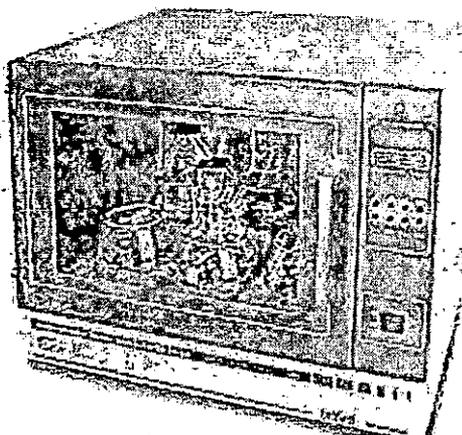
E)



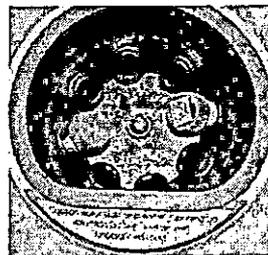
F)



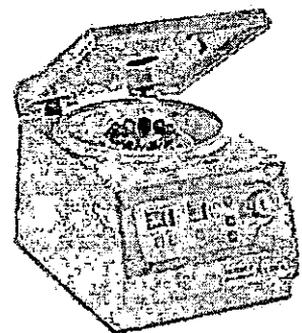
G)



H)



I)



Good Luck

Dr. Mohammed Asaad Elmowafy

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Draft paper (مسودة)